Inappropriate Medication Use in Older Adults

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Nicole Heath Bixler, DO, MBA, FACOFP
What are we Talking About?

- The “Older Adult” population
- Review of Sources – Beers Criteria, START and STOPP Lists
- Physiologic approach to the medications
- Alternatives in treatment
In the United States – 65 and older

Baby Boomers – population surge in 2011

10,000 people everyday for next 20 years

By 2030 – 72 million people (1 in 5)
What are we treating in this group?

- Since 1910, heart disease is #1 cause of death
- Since 1938, cancer is #2 cause of death
- Chronic conditions – diabetes, stroke, Alzheimer’s, lung disease
- 2 out of 3 have multiple chronic conditions
What do we need to watch for?

- Substance abuse, dementia, depression
- Duplication of treatment by multiple providers
- *Drug–Drug interactions*
- *Adverse drug effects*
Implications in Primary Care

- Ambulatory care – 27% of adverse drug events are preventable

- Long term care – 42% of adverse drug events are preventable

- Most problems at the ordering and monitoring stages
PIM (Potentially Inappropriate Medications)

- Often limited effectiveness in older adults
- Associated delirium, fractures, GI bleed, falls
- “Less is more approach” to improve health outcomes
- Integral part of policy for CMS regulations and Medicare Part D
Beers Criteria

- Addressed initially in 1991 for nursing home patients
- 2003 – to include all aspects of geriatric care
- 2012 – updated by American Geriatric Society
- Strong link between this list of meds and poor patient outcomes
The Numbers of Beers

- 53 medications or classes comprise the final 2012 list
- 34 of those are potentially inappropriate medications to avoid
- 14 medications to use with caution
- 19 medications classes dropped – most due to being off the market
Beers List Categories

- Medications to avoid regardless of disease or condition

- Potentially inappropriate depending on disease state or condition

- Medications to use with caution
Anticholinergics

- AVOID (strong)
- Decreased clearance
- Tolerance develops when used as a hypnotic
- Confusion, dry mouth, constipation
- Hydroxyzine and promethazine (high)
- All others moderate – diphenhydramine, cyproheptadine, doxylamine
Antiparkinson Agents

- AVOID (strong)

- Not recommended for prevention of EPS with antipsychotics

- Better treatments for Parkinson’s

- benztropine
Antispasmodics

- AVOID (strong)
- Exception for short term palliative care to decrease secretions
- Highly anticholinergic, uncertain effectiveness
- dicyclomine, scopolamine, hyoscyamine, belladonna alkaloids
Anti-thrombotics

- AVOID (strong)
- May cause orthostatic hypotension
- More effective alternatives
- dipyridamole (short acting oral form), ticlopidine
**Anti–infective**

- AVOID (strong) – in long term suppression
- Pulmonary toxicity
- Lack of efficacy in patients with CrCl <60 due to inadequate drug concentration in urine
- nitrofurantoin
Cardiovascular – Alpha 1 Blockers

- AVOID (strong) – as use for anti-hypertensive
- Orthostatic hypotension
- Alternatives have superior benefit/risk profile
- doxazosin, terazosin
Cardiovascular – Central Alpha Agonists

- AVOID (strong) – as first line treatment for hypertension

- Bradycardia, orthostatic hypotension

- Adverse CNS effects

- locnidine, methyldopa
AVOID (strong) – as first line treatment for Afib

Rate control yields better balance of risk/harm than rhythm control

amiodarone – QT prolongation, pulmonary toxicity, thyroid disease

sotalol, propafenone
Cardiovascular – other

- AVOID (strong)

  - digoxin >0.125 mg/day – in heart failure – higher doses with increased toxicity and little benefit
  - nifedipine IR – hypotension, risk of MI
  - spironolactone >25 mg/day – in heart failure – risk of hyperkalemia especially with NSAID, ACE, ARB treatment
Central Nervous System – TCA’s

- AVOID (strong)

- Highly anticholinergic, sedating, orthostatic hypotension

- amitriptyline, imipramine, doxepin >6mg/day
Central Nervous System – Antipsychotics

- AVOID (strong)

- First (conventional) – fluphenazine, haloperidol
- Second (atypical) – risperidone, quetiapine, olanzapine

- Increased risk of CVA and mortality in those with dementia

- Avoid use for behavioral problems unless threat or harm to self or others
Central Nervous System – Barbiturates

- AVOID (strong)

- High rate of physical dependence – risk of overdose at low dosages

- Tolerance to sleep benefits

- butalbital, phenobarbital, secobarbital
Central Nervous System – Benzodiazepines

- AVOID (strong) – for treatment of agitation, insomnia, delirium

- Risk of cognitive impairment, delirium, falls, fractures, MVA’s

- Short and Intermediate Acting – alprazolam, temazepam, lorazepam

- Long Acting – clonazepam, diazepam (may be appropriate for seizures, Severe GAD, BZD and ETOH withdrawal, end of life care)
Central Nervous System – Non-BZD Hypnotics

- AVOID (strong) – for use > 90 days
- Similar in side effect to that of BZD’s
- Minimal improvement in sleep latency and duration
- zolpidem
AVOID (strong)

- testosterone – contraindicated in prostate cancer (only use in severe hypogonadism)
- Desicated thyroid – cardiac effects
- estrogen (oral and patch) – carcinogenic potential (endometrium and breast) and lack of cardioprotective effect and cognitive benefit
Endocrine – Diabetes

- AVOID (strong)

- *Sliding Scale Insulin* – high risk of hypoglycemia without improvement in hyperglycemia management

- chlorpropramid – prolonged hypoglycemia, SIADH

- *glyburide* – greater risk of prolonged hypoglycemia due to long half life
Gastrointestinal

- AVOID (strong)
- Extrapyramidal effects – tardive dyskinesia
- metoclopramide – only use for gastroparesis
- trimethobenzamide – least effective antiemetic drug
Pain – Non COX Selective NSAIDs

- AVOID (strong) – for chronic use unless other treatment ineffective and patient can take PPI

- Increased risk of GI bleed and PUD – especially > age 75; on anticoagulant; steroid dependent

- PPI reduces but does not eliminate risk

- 3–6 months treatment – 1% risk, > 1 year – 2–4% risk
Pain – other

- indomethacin – most adverse effects of all NSAIDS
- pentazocine – opioid analgesic – confusion and hallucinations more than other narcotics
- cyclobenazeprine, carisoprodol, methocarbamol – poorly tolerated due to anticholinergic effects, sedation, risk of fracture
Drug–Disease / Drug –Syndrome Interactions – Heart Failure

- NSAIDs, COX–2
- pioglitazone, rosiglitazone
- cilostazol
- CCB’s – verapamil, diltiazem

- All promote fluid retention and potential exacerbation of heart failure

- Lowers seizure threshold
- May be acceptable in patients with well controlled seizures or other treatments ineffective
- bupropion, tramadol, olanzapine
Drug–Drug / Drug–Syndrome Interactions – History of Falls

- Ability to produce ataxia
- Impaired psychomotor function
- Syncope
- Anticonvulsants, BZD’s, TCA’s, SSRI’s, Antipsychotics
Drug–Drug / Drug–Syndrome Interactions – Constipation

- Can worsen chronic condition and lead to more urinary issues

- Highest risk – Antimuscarinics for urinary incontinence – oxybutynin, tolteradine

- diltiazem, verapamil, antihistamines, antispasmodics, TCA’s

- Chronic Kidney Disease IV & V – triamterene and NSAIDs can increase kidney injury

- Urinary Incontinence – all forms of estrogen, alpha blockers can aggravate incontinence

- BPH – inhaled anticholinergics – can cause urinary retention
Medications to use with Caution

- ASA for primary prevention of cardiac events – lack of benefit versus risk in patients >80

- dabigatran – greater risk of bleed than Warfarin in >75 and lack of safety in CrCl<30

- prasugrel – greater risk of bleeding, risk may be offset by benefit in highest risk – MI, DM

- mirtazapine, SSRI’s, SNRI’s, TCA’s, cisplatin, vincristine– SIADH and hyponatremia
Another View – the START/STOPT lists

- START (Screening Tool to Alert doctors to the Right Treatment)

- STOPTP (Screening Tool of Older Persons potentially inappropriate Prescriptions)

- STOPTP may work better than Beers in identifying meds that cause negative outcomes such as hospital admissions
STOPP List – More in Depth

- Pharmacist’s/Prescriber’s Letter 2011

- Overall, shows more specifics in regards to time frames of medication usage and gives information on alternative choices

- More user friendly in narrowing patients into categories based on length of symptoms or length of treatment needed
Categories not Addressed Specifically in Beers

- Rheumatoid Arthritis – start DMARDs, stop systemic corticosteroids
- Gout – start Allopurinol, stop Colchicine
- COPD – start inhaled corticosteroid and inhaled bronchodilator, stop systemic corticosteroids
START the following if no contraindication:

- ACEI/ARB – post MI, heart failure, DM nephropathy
- Beta blockers – chronic stable angina
- clopidogrel – as option to ASA for vascular diseases
- warfarin – for chronic Afib
- Statins – for vascular diseases, independent with ADL’s and expected to live > 5 years
- Antihypertensives – if SBP > 160
Choose cardioselective in COPD patients – to avoid bronchospasm (atenolol, bisoprolol, metoprolol)

Avoid if diabetic with > 1 hypoglycemic event per month (can mask the symptoms of hypoglycemia)

Avoid combination with verapamil – can increase risk of heart block
Other Areas of Concern

- Avoid thiazide diuretics in gout patients – can worsen gout by decrease in uric acid excretion
- Avoid cimetidine with warfarin – can increase warfarin levels
- SSRI’s if sodium < 130 in two previous months
- Full dose PPI’s after 8 weeks of treatment – not indicated for GERD, PUD, esophagitis
More Concerns

- Glaucoma patients – avoid TCA’s, nebulized ipratropium and urinary antispasmodics – can increase pressure

- Theophylline should not be used as monotherapy in COPD
Things You Should Do...

- Start bisphosphonate with chronic systemic corticosteroid use
- Start calcium and vitamin D for osteoporosis
- Start metformin for Type 2 DM
- Start antidepressant if symptoms > 3 months
- Start levodopa for Parkinson's
So What do you Prescribe to the Older Adult?

- This is a guideline to be used as an educational tool for providers to make the best possible choice for the patient.

- In some instances, insurance carriers will not cover some of these meds due to the high risk nature and will need to check formulary alternatives.

- If you do prescribe, monitor closely for known risks and side effects.
Options for Alternative Treatment

- Analgesia – acetaminophen, topicals
- Narcotics – hydrocodone, morphine, oxycodone

- Anxiety / Depression – SSRI and SNRI better than TCA
- Insomnia – consider short term, sleep hygiene, melatonin
- Psychosis – olanzapine, quetiapine, risperdone
More Options for Treatment

- Anti-emetic – ondansetron
- Antihistamine – fexofenadine, fluticasone
- Muscle relaxants – baclofen, tizanidine
- Anti-thrombotics – ASA/dipyridamole ER
- Alzheimer’s – donepezil
- Hypoglycemics – glimepiride, glipizide
Resources

- The American Geriatric Society 2012 Beers criteria Update Expert Panel, American geriatrics Society Updated Beers Criteria for Potentially Inappropriate Medication Use in Older Adults.  
  http://www.americangeriatrics.org